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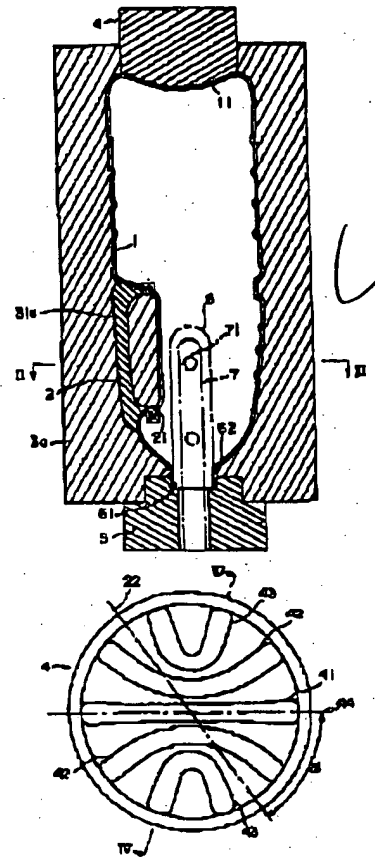
TITLE : MOLDING METHOD FOR BOTTLE WITH GRIP



ABSTRACT : PURPOSE: To improve heat resistance of a bottom of a mold, to suppress a deformation and to suppress occurrence of an irregular thickness by correcting a deviation of a core of the bottom by setting a temperature of the body and the bottom of the molds to a predetermined temperature, inclining the bottom having an uneven shape at a symmetrical axis at a predetermined angle to a vertical plane including a center of a grip and a center axis of a bottle, and blow molding it.

CONSTITUTION: A preform 6 heated to 70-130°C in molds in which a grip 2 having an engaging part 21 is inserted is biaxially orientation blow-molded, a wall of the preform 6 is wound on the part 21 as a bottle with the grip. In this case, temperatures of the bodies 3a, 3b of the molds are set to 80-200°C, and a temperature of a bottom 4 is set to 50-150°C. The bottom 4 having uneven shapes 41, 42, 43 formed substantially linearly symmetrical with directional properties is so set as to be inclined at 20-70 degrees to a vertical plane 22 including a center of the grip and a central axis of the bottle. It is blow-molded in this state, brought into contact with the molds for several seconds to be heat treated, then cooled and removed.

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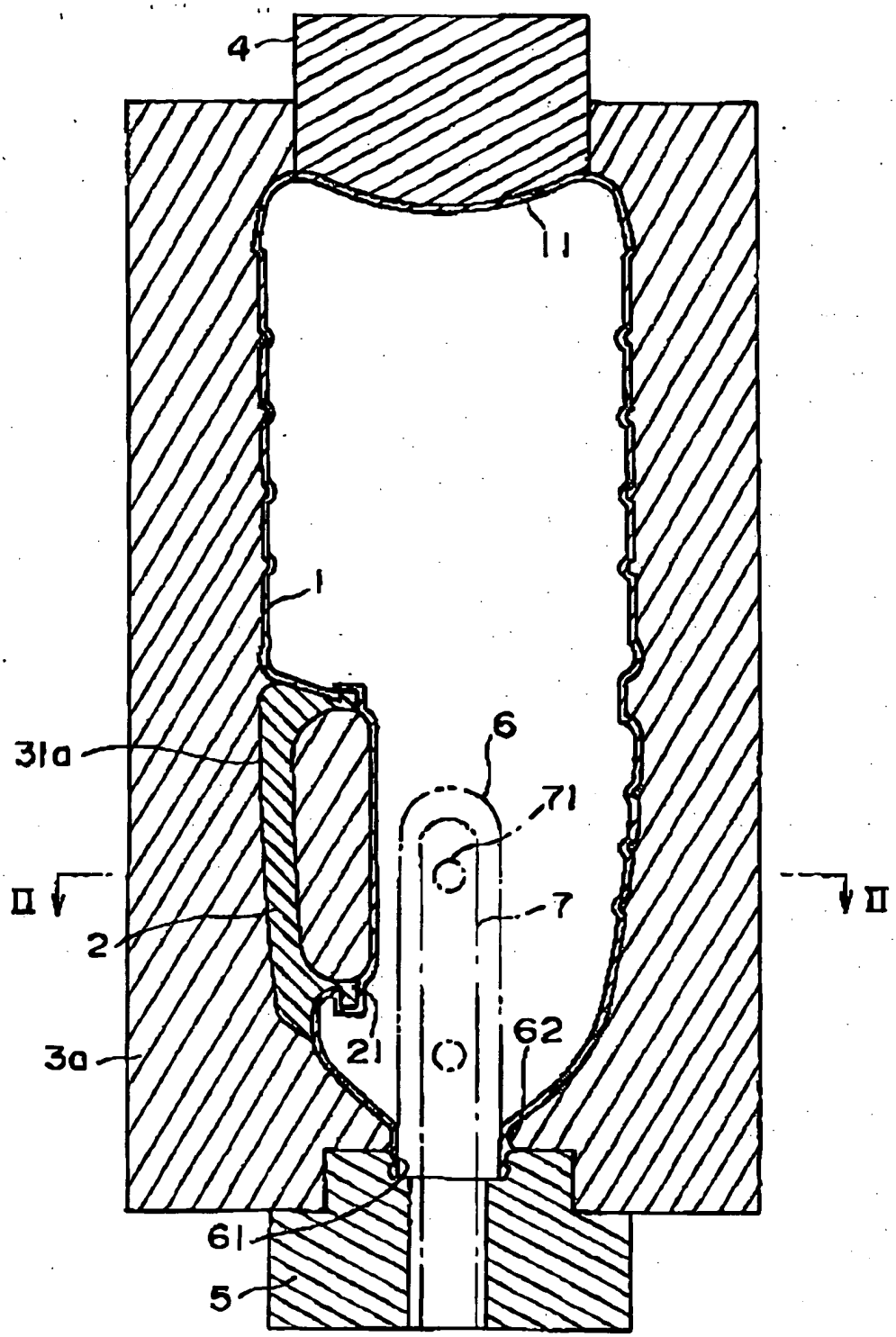
DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] the line of the shape of toothing in which this invention has directivity with the bottle drum section which has a handle -- it is related with the shaping approach of a bundle deposit bottle of having the bottle pars basilaris ossis occipitalis in which the rib was formed.
[0002]
[Description of the Prior Art] In order to fabricate the plastics bottle 1 which has a handle 2 in drawing 2 as the front view of the cross section of metal mold shown to drawing 1 and conventionally shown in the II-II sectional view of drawing 1 It is constituted by the molds 3a and 3b of the pair for forming a bottle drum section, the bottom plate 4 for forming a bottle pars basilaris ossis occipitalis, and the neck ring 5 holding preforming 6. To Molds 3a and 3b The metal mold with which the parts 31a and 31b which arrange the handle 2 fabricated beforehand were formed was used.
[0003] In case blow molding of the plastics bottle 1 is carried out using the metal mold of the above-mentioned configuration After arranging in the mold which divided the preforming 6 which was held at the handle 2 and the neck ring 5, and was heated by molding temperature, As Molds 3a and 3b and a bottom plate 4 are closed, high-pressure blow air is blown into preforming 6 and a mold inside is made to meet, while fabricating a plastics bottle 1, twine the wall of said preforming 6 round [the fitting section 21 of said handle 2], and a handle 2 is attached. While extracting the bottom plate 4 in the bottle lower part, it was what opens Molds 3a and 3b to a bottle longitudinal direction, and takes out a plastics bottle 1.
[0004]
[Problem(s) to be Solved by the Invention] Although the die temperature could be raised or how to carry out annealing processing within a heating furnace after shaping could be considered in order to fabricate the bottle which is equal to elevated-temperature restoration of 65 degrees C or more by the above-mentioned conventional approach, deformation occurred in the handle fitting section 21, and all had the fault that bundle net income attachment reinforcement will fall.
[0005] two or more lines directive and arranged mostly at axial symmetry in order to gather the draw magnification of a bottle pars basilaris ossis occipitalis and to aim at improvement in reinforcement especially, in preparing a rib it is easy to produce a gap of the heart, i.e., the gap with the core of a preforming pars basilaris ossis occipitalis, and the core of a bottle pars basilaris ossis occipitalis, for directivity toward the direction of a handle 2, and, for this reason, near the pars basilaris ossis occipitalis by the side of an anti-handle tends to become thin meat -- moreover, a line -- there is a problem of producing deformation from the field of the directivity of a rib in a bottle ground plane.
[0006] Then, this invention aims at offering the plastics bottle of structure which can prevent the fall of bundle net income attachment reinforcement, a gap of the heart, thickness deviation, deformation, etc., aiming at improvement in the thermal resistance of a bottle, and the reinforcement of a bottle pars basilaris ossis occipitalis.
[0007]
[Means for Solving the Problem] This invention uses the above-mentioned purpose as an achievement plug, and biaxial stretching blow molding of the preforming heated within the metal mold which inserted the handle which has the fitting section beforehand at 70 degrees C or more 130 degrees C or less is carried out. While making temperature of the mold of metal mold into 80 degrees C or more 200 degrees C or less and making temperature of a bottom plate into 50 degrees C or more 150 degrees C or less in the approach of twining the wall of said preforming round [said fitting section], and using as a bundle deposit bottle It sets so that it may have the inclination of 20 to 70 degrees to the vertical plane where said axis of symmetry contains a bundle alignment in its hands and a bottle medial axis for the bottom plate which has the shape of toothing directive and formed in axial symmetry mostly. Blow molding is carried out, and after making it stick to metal mold for several seconds

and heat-treating, it is characterized by cooling and taking out.
[0008]
[Function] The bundle deposit bottle obtained according to the above-mentioned process has the thermal resistance which is equal to elevated-temperature restoration of 65 degrees C or more, deformation can occur and attach in the handle fitting section, reinforcement cannot fall, and it can suppress deformation of a pars basilaris ossis occipitalis etc., and can also correct a gap of the heart of the pars basilaris ossis occipitalis of a handle.
[0009]
[Example] Hereafter, this invention is further explained to a detail based on the example shown in a drawing. The front view of the cross section of the metal mold which uses drawing 1 for the shaping approach of the bundle deposit bottle of this invention, and drawing 2 are [the top view of a bottom plate and drawing 4 of the II-II sectional view of drawing 1 and drawing 3] the IV-IV end view of drawing 3 .
[0010] The shaping approach of the bundle deposit bottle of this invention carries out biaxial stretching blow molding of the preforming 6 heated at 70 degrees C or more 130 degrees C or less within the metal mold which inserted the handle 2 which has the fitting section 21 beforehand, as shown in drawing 1 -4. While making temperature of the molds 3a and 3b of metal mold into 80 degrees C or more 200 degrees C or less and making temperature of a bottom plate 4 into 50 degrees C or more 150 degrees C or less in the approach of twining the wall of said preforming 6 round [said fitting section 21], and using as the bundle deposit bottle 1 It sets so that it may have the inclination of 20 to 70 degrees to the vertical plane 22 where said axis of symmetry 44 contains handle 2 core and a bottle medial axis for the bottom plate 4 which has the shape of toothing 41, 42, and 43 directive and formed in axial symmetry mostly. Blow molding is carried out, and after making it stick to metal mold for several seconds and heat-treating, it is characterized by cooling and taking out.
[0011] Especially as the quality of the material of preforming 6, since polyester resin, such as polyethylene terephthalate, can improve thermal resistance with heating, it is desirable. It is necessary to heat preforming 6 beforehand to 70-degree-C or more extension temperature requirement 130 degrees C or less.
[0012] Moreover, as beforehand shown in drawing 1 , as for this preforming 6, it is desirable the stopper section 61 top-panel neighborhood and to heat even the neck ring section 62 desirably, to carry out crystallization processing, and to make it milk at least. The leakage of the contents by deformation of the stopper section 61 at the time of elevated-temperature restoration and invasion of air can be lost by this.
[0013] the molds 3a and 3b of drawing 1 and the metal mold for blow molding shown in 2 -- temperature -- the temperature of 80 degrees C or more, 200 degrees C or less, and a bottom plate 4 -- the temperature of the range of 50 degrees C - 150 degrees C -- it is desirably made 90 degrees C - 120 degrees C. Thermal resistance is not given to the bottle drum section which the temperature of Molds 3a and 3b fabricated at less than 80 degrees C, but deformation occurs at the time of elevated-temperature restoration. Moreover, if 200 degrees C is exceeded, generating of poor coiling round in the handle fitting section 21 and nebula of the neighborhood of this will occur. Moreover, if the thermal resistance of the pars basilaris ossis occipitalis 11 of the bottle with which the temperature of a bottom plate 4 was acquired at less than 50 degrees C is scarce and exceeds 150 degrees C, it will deform at the time of shaping.
[0014] It is kept warm by warm water piping prepared in the interior, respectively, and the above-mentioned body molds 3a and 3b contact the plastics bottle 1 after shaping for 2 - 10 seconds, and perform annealing, and he is trying to raise thermal resistance.
[0015] The configuration of a bottom plate 4 has drawing 3 and the shape of toothing 41, 42, and 43 like 4, the shape of this toothing has directivity, and, moreover, is formed in axial symmetry to the 1st rib 41, and an include angle alpha has the inclination of 40 to 50 degrees from 20 degrees desirably 70 degrees to the field 22 where this symmetry axis 44 contains a handle 2.
[0016] At less than 20 degrees, effectiveness, such as deformation prevention and gap prevention of the heart, has few these include angles alpha, and when it exceeds 70 degrees, deformation of the ground plane of what decreasing becomes easy to produce a gap of the heart.
[0017] the line corresponding to the shape of toothing 41, 42, and 43 to the pars basilaris ossis occipitalis 11 of the bottle 1 with a handle obtained by this -- it being effective in preventing the deformation at the time of restoration, while a rib is formed and pars-basilaris-ossis-occipitalis reinforcement improves, and that it is the above-mentioned include angle alpha While being able to suppress deformation of the pars basilaris ossis occipitalis 11 of the obtained bottle 1 with a handle etc., the smoothness of the touch-down section becoming good and the stability of a bottle increasing, a gap of the heart of a pars basilaris ossis occipitalis 11 can be controlled.
[0018] The shape of toothing of a bottom plate 4 shown in drawing 3 and drawing 4 has the 1st rib 41 of the shape of a straight line passing through a core, the 2nd rib 42 of the abbreviation sector prepared in axial symmetry to this 1st rib 41, and the 3rd rib 43.
[0019] These ribs 41, 42, and 43 are formed so that the include angle alpha of about 45 degrees may be made to

the direction of [within the horizontal plane of the parting line which remains, the field 22, i.e., the bottle drum section, in which it is formed in so that it may have a principal direction in the symmetry-axis 44 direction as a whole in a horizontal plane, and the sense of a symmetry axis 44 contains said handle,].
[0020] Since the part which the parting plane and bottom plate 4 of Molds 3a and 3b cross is difficult to fully spread warm water piping etc., the heating effectiveness of this part will differ from other parts.
[0021] Thus, while forming the shape of toothing 41, 42, and 43 formed in a bottom plate 4 so that it may be directive in a horizontal plane and may become axial symmetry By forming so that the specific include angle alpha may be made to the field 22 where this symmetry axis 44 contains a handle 2 while the directivity which the toothing-like array itself has, and the difference in the field 22 containing a handle 2, i.e., the heating effectiveness in the parting plane part of each metal mold, deny mutually, there are and suppressing deformation etc., can cancel a gap of the heart of the direction of a handle, and near the pars basilaris ossis occipitalis by the side of an anti-handle also becomes thin meat -- prevention -- it is thought that things are made.
[0022] Although it is necessary to cool after carrying out blow molding and heat-treating, while exhausting blow air, for example, it lets a hole 71 pass from the extension rod 7 in the air, and it is 20-40kg/cm2. It is desirable to cool a bottle for the high-pressure air for cooling from delivery and an inside. It is desirable in that case to enable it to cool the fitting section 21 and the preforming wall 6 of the neighborhood of it early by enlarging magnitude of the hole 71 of the extension rod 7 especially in the fitting section 21 neighborhood of a handle 2 etc.
[0023] Since it can prevent that the handle fitting section 21 deforms with heat while being able to cool a bottle efficiently even if it heat-treats with the heated metal mold since it is not necessary to cool the metal mold itself as mentioned above by cooling from the interior, sufficient thermal resistance can be given.
[0024] Deformation can occur and attach in the handle fitting section, reinforcement cannot fall, and the bottle with a handle made from the above process can suppress deformation of a pars basilaris ossis occipitalis etc., and can also correct a gap of the heart of the pars basilaris ossis occipitalis of a handle.
[0025] For example, remarkable deformation is not seen, the whole bottle after carrying out the cap after filling up the bottle 1 with a capacity of 1.8l. with 70-degree C warm water, putting six in a carton box, leaving it under a 65-degree C ambient atmosphere for 24 hours and cooling naturally in an after that and ordinary temperature ambient atmosphere for one day, and as a result of viewing the appearance of the handle fitting section neighborhood especially.
[0026] In addition, effectiveness with the same said of a plastics bottle without a handle although this example illustrated and explained the bundle deposit plastics bottle is acquired, the configuration of a rib, a number, etc. can be suitably set up with the path of the body of a bottle, or the configuration of a pars basilaris ossis occipitalis, and especially the quality of the material of the body of a bottle is also limited, and it is not a thing.
[0027]
[Effect of the Invention] As explained above, this invention carries out biaxial stretching blow molding of the preforming heated within the metal mold which inserted the handle which has the fitting section beforehand at 70 degrees C or more 130 degrees C or less. While making temperature of the mold of metal mold into 80 degrees C or more 200 degrees C or less and making temperature of a bottom plate into 50 degrees C or more 150 degrees C or less in the approach of twining the wall of said preforming round [said fitting section], and using as a bundle deposit bottle It sets so that it may have the inclination of 20 to 70 degrees to the vertical plane where said axis of symmetry contains a bundle alignment in its hands and a bottle medial axis for the bottom plate which has the shape of toothing directive and formed in axial symmetry mostly. Since it is the shaping approach of the bundle deposit bottle characterized by cooling and taking out after carrying out blow molding, making it stick to metal mold for several seconds and heat-treating While strengthening a bottle pars basilaris ossis occipitalis according to the rib structure of the shape of directive toothing and being able to improve the thermal resistance of a pars basilaris ossis occipitalis Deformation can occur and attach in the handle fitting section, reinforcement cannot fall, deformation of a pars basilaris ossis occipitalis etc. can be suppressed, a gap of the heart of the pars basilaris ossis occipitalis of a handle can also be corrected, and generating of thickness deviation can be suppressed.

[Translation done.]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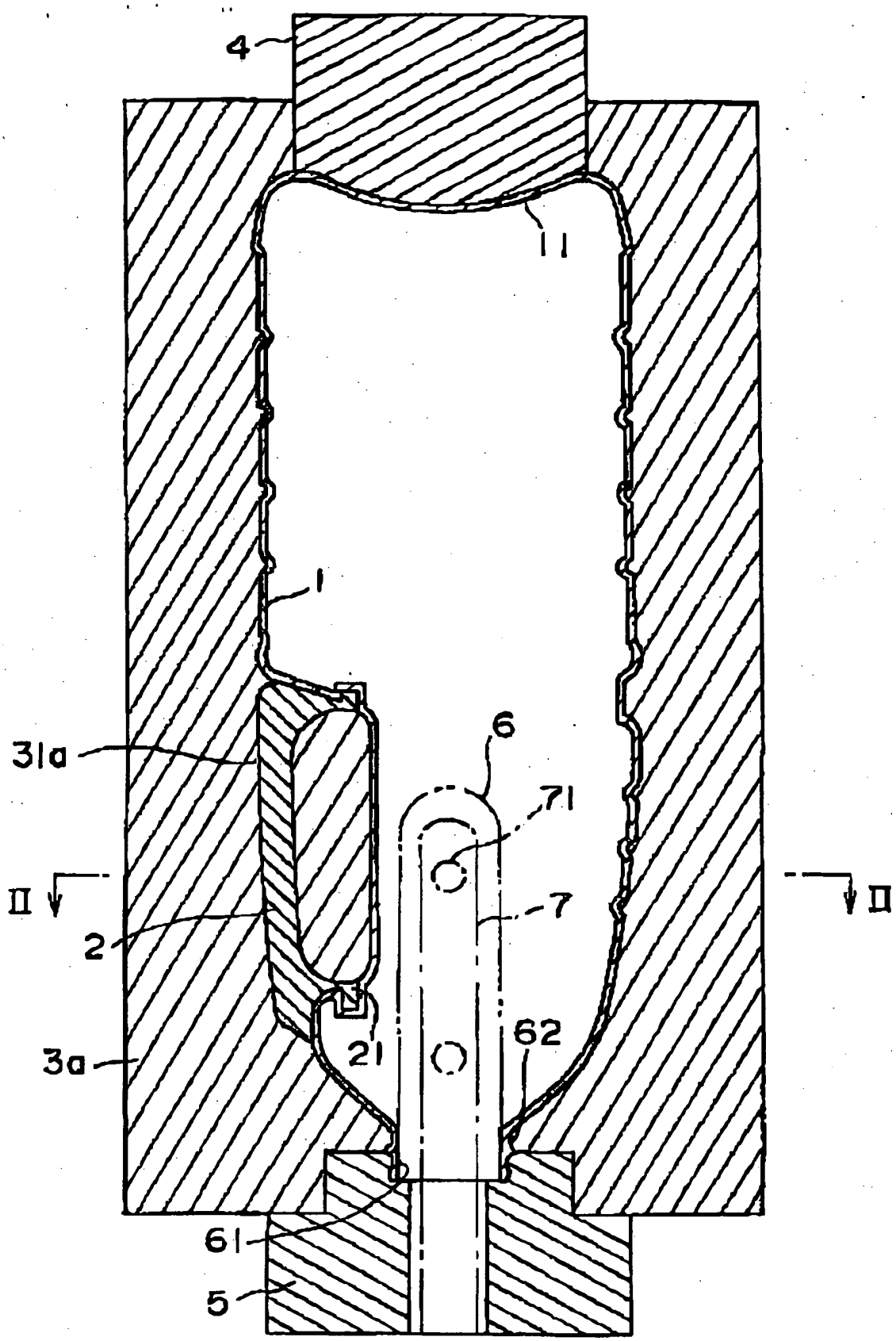
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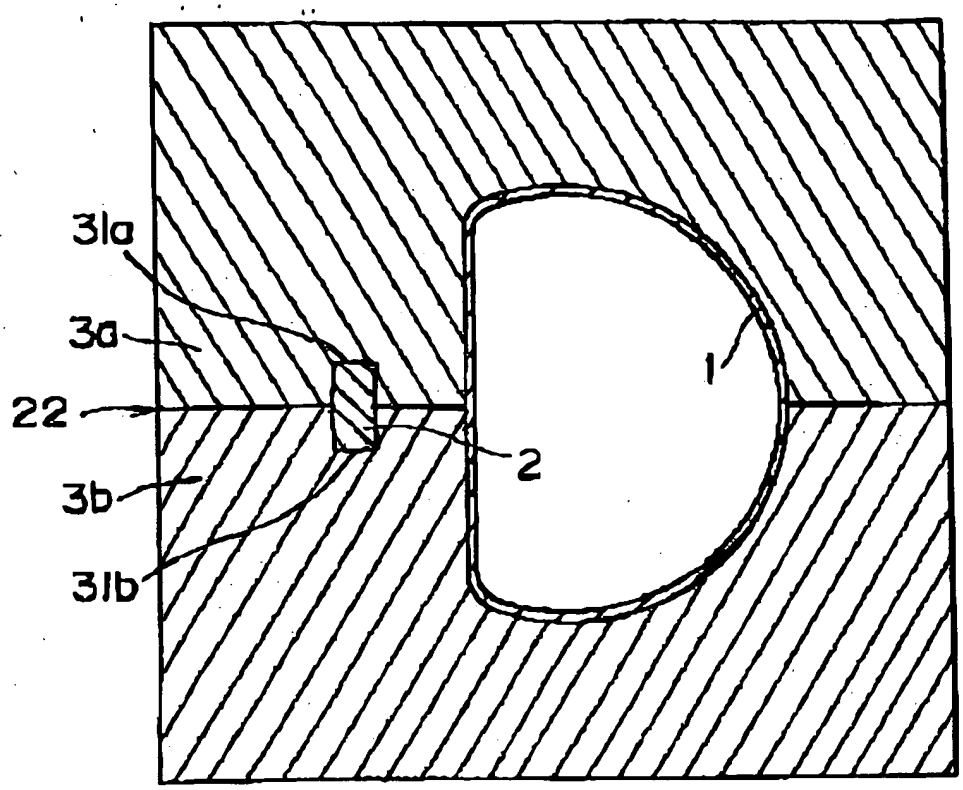
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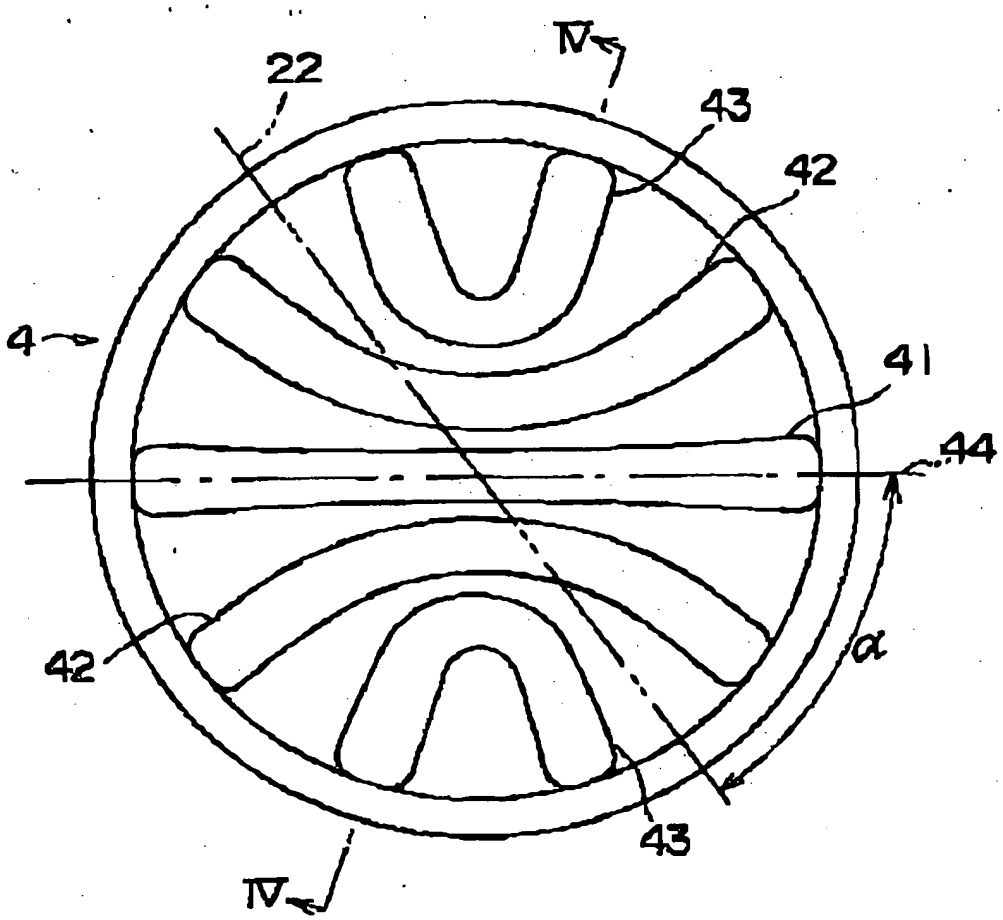
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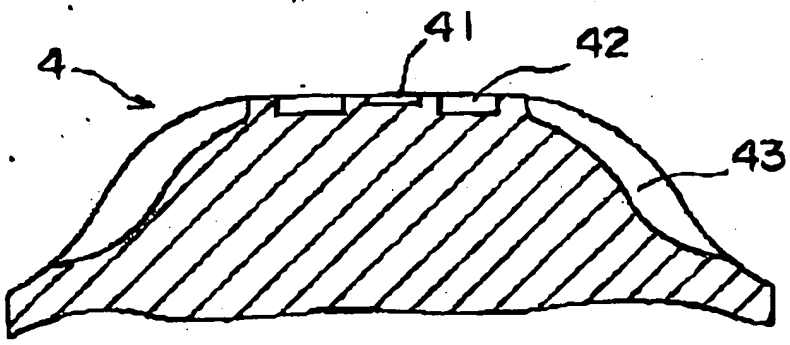
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